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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,235	10/09/2003	Yoshihiro Fukano	CS-30-031009	6525
22712 7590 12/26/2006 PAUL A. GUSS PAUL A. GUSS ATTORNEY AT LAW 775 S 23RD ST FIRST FLOOR SUITE 2 ARLINGTON, VA 22202			EXAMINER KOCZO JR, MICHAEL	
			ART UNIT	PAPER NUMBER
			3746	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		12/26/2006	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/681,235

Applicant(s)

FUKANO ET AL.

Examiner

Michael Koczo, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application |
| 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) ☐ Other: ____. |

DETAILED ACTION

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: there is no basis in the specification for “circular arc-shaped chamfered section” of claim 4.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 8, the expression “wherein a rotary shaft is screwed with said piston in said axial direction” does not clearly set forth the structural and functional connection between the shaft and the piston. For example, does the shaft rotate relative to the piston or is it fixed to the piston with a threaded screw connection? In claim 9, line 3, stating that the shaft is retained “rotatably” is incorrect because the shaft is actually retained axially.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: no structure is recited for controlling the displacement amount of the piston in response to the detected pressure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 to 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergandy (US 4,569,378) in view of Rosen (US 2,807,213). Bergandy discloses a pump having a body 22, a bonnet 23, a tapered piston 11 and a membrane 9. The membrane 9 has a circumferential edge which is disposed between the body 22 and the bonnet 23. The piston 11 is driven by drive bar 6. However, Bergandy does not disclose a rotary driving source driven and rotated by an electric signal. Rosen discloses a pump similar to the pump of Bergandy wherein the pistons are driven by an electric motor 2 having an electronic speed control. This permits accurate control over the amount of fluid which is pumped. In view of this teaching, it would have been obvious to provide the pump of Bergandy with an electric motor for driving bar 6.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogden et al (US 5,415,528) in view of Bergandy. Ogden et al disclose an electric motor driven pump having a pressure sensor 42. The displacement amount of piston 36 is controlled based on the detected pressure. However, Ogden et al do not disclose the piston and membrane structure as claimed. Bergandy discloses a pump having a body 22, a bonnet 23, a tapered piston 11 and a membrane 9. The membrane 9 has a circumferential edge which is disposed between the body 22 and the bonnet 23. This structure allows greater axial movement of the piston and therefore greater displacement as compared to the piston and membrane 30 of Ogden et al. In view of this

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teaching, it would have been obvious to substitute the piston and membrane of Bergandy for the piston and membrane of Odgen et al.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergandy in view of Rosen, as applied to claim 1 above, and further in view of Taplin (US 3,250,225).

Bergandy discloses the invention substantially as claimed. However, Bergandy does not disclose check valves provided on the first and second ports. Taplin discloses a pump wherein the check valves 4 and 6 are disposed in ports in the body 1a. Having the check valves in the body 1a reduces the "dead" space above the piston which improves pumping efficiency of a liquid pump in the event that air is in the intake line. In view of this teaching, it would have been obvious to locate the check valves of Bergandy in the ports 12 and 13.

Claims 8 and 9, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergandy in view of Rosen, as applied to claim 1 above, and further in view of Henry (US 5,577,433). Bergandy discloses the invention substantially as claimed. However, Bergandy does not disclose a screw drive. Henry disclose a screw drive for a piston. The screw shaft 19 is retained axially by bearing 21. Because of the high transmission ratio of a screw drive (turns of the shaft per distance the piston moves) it is possible to accurately control the piston displacement and therefore the amount of fluid pumped. In view of this teaching, it would have been obvious to substitute a screw drive for the piston drive of Bergandy.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergandy in view of Rosen, as applied to claim 1 above, and further in view of Ghiardi (US 1,580,131). Bergandy discloses the invention substantially as claimed. However, Bergandy does not disclose a piston having a pin engaging a groove. Ghiardi discloses a piston having a

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screw drive and a pin 15 which engages groove 14 to prevent the piston from rotating due to the torque of the screw drive. Because of the high transmission ratio of a screw drive (turns of the shaft per distance the piston moves) it is possible to accurately control the piston displacement and therefore the amount of fluid pumped. In view of this teaching, it would have been obvious to substitute a screw drive for the piston drive of Bergandy and to provide the piston with a groove engaging pin to prevent the piston from rotating.

Claims 12 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Bergandy in view of Rosen, as applied to claim 1 above, and further in view of Oxnard (US 1,085,818). Bergandy discloses the invention substantially as claimed. However, Bergandy does not disclose a piston having grooves on its tapered surface. Oxnard discloses a positive displacement fluid device having a tapered piston connected to a rolling membrane. The tapered portion of the piston has corrugations 19 which are readable as grooves. These corrugations aid in retaining the membrane on the piston. In view of this teaching, it would have been obvious to provide the tapered portion of the piston of Bergandy with grooves.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry relating to patent applications in general should be directed to the Patent Assistance Center at 1-800-786-9199.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Koczo, Jr. whose telephone number is 571-272-4830.

The examiner can normally be reached on M-Th; 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg can be reached at 571-272-4828. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Michael Koczo, Jr.', with a stylized flourish at the end.

Michael Koczo, Jr.
Primary Examiner
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